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Now, fortunately, Dr. Bastian has not only carefully measured and described these organisms, but he has drawn them, and they are reproduced on the frontispiece of the book. He describes them as the $\frac{1}{4000}$ of an inch in diameter; they were provided with a long, rapidly moving lash (flagellum), by which granules were freely moved about. But, besides this, "*there were many smaller, motionless, tailless spherules, of different sizes, whose body-substances presented a similar appearance to that of the monads*, and of which they were in all probability earlier developmental forms."[1]

Now, by careful comparison, I find that this monad is no other than the "uniflagellate monad," which is the fourth in the series whose life-histories were studied by Dr. Drysdale and myself.[2]

(1.) Dr. Tyndall has proved, in connection with a host of others, but in a more definite and precise manner, that in *filtered infusions* five minutes' boiling does kill every form of bacteria.

(2.) He has further shown that they are propagated by demonstrable germs *only*, in such infusions; and

(3.) This fact removes the probability of their spontaneous generation to an almost infinite distance.

As to the development of bacteria in infusions charged with solid matter, precise experiment of a sufficiently comprehensive character has yet to be made on them, in relation to the demonstrated germs. Meantime, shall we accept "spontaneous generation" on such ground as its strongest advocate has now to offer, and ignore the vast chain of facts copiously attested and controlled, which are in perfect harmony with the known laws of the entire organic world? This, and nothing less than this, is what Dr. Bastian inculcates and demands.

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RECENT LITERATURE.

Pickering's Elements of Physical Manipulation.[3] — The first volume of this useful manual we noticed at the time it was published; the second, now before us, is more extended in its range than originally intended by the author, and will be still more valuable for students. This volume treats of electricity, heat, mechanical engineering, meteorology, practical astronomy, and lantern projections. The author suggests that the laboratory method may be used to teach astronomy as successfully as chemistry or physics; and accordingly considerable space is given to this subject, sufficient instructions being given to enable the civil engineer or explorer to be able to determine his latitude, longitude, and time, by the sextant or transit. The chapter on lantern projections will be found useful to lecturers on scientific topics, who need the lantern as a means of illustration, and to know how to produce the best results by simple and inexpensive means.

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[1] Evolution, page 178.

[2] Monthly Microscopical Journal, xi. 69, *et seq.*

[3] *Elements of Physical Manipulation.* By Prof. E. C. Pickering. Part II. New York: Hurd and Houghton; Boston: H. O. Houghton & Co. 1876. 8vo, pp. 316. $4.00.

HAYDEN'S REPORT ON THE GEOLOGY OF COLORADO.[1] — This report is almost entirely devoted to geology, comprising the observations made by Professor Hayden and his assistants in 1874. The volume is mainly filled with the reports of Professor Hayden, Dr. A. C. Peale, and Mr. F. M. Endlich. Dr. Samuel Aughey contributes a valuable chapter on the surface geology of Nebraska, and Mr. L. Lesquereux a report on the Tertiary flora of the North American Lignitic, considered as evidence of the age of the formation, with a review of the cretaceous flora of North America; an extended and very fully illustrated report on the ancient ruins in Southwestern Colorado, by Mr. W. H. Jackson, is followed by an interesting essay on the molluscs of the Rocky Mountains, by Mr. Ernest Ingersoll, illustrated by some anatomical drawings. Under the head of Topography and Geography, are reports by Messrs. Henry Gannett, S. B. Ladd, A. D. Wilson, and Franklin Rhoda. The volume is certainly in interest and practical value not behind its predecessors.

BAIRD'S ANNUAL RECORD OF SCIENCE FOR 1875.[2] — This volume will be found indispensable to the general public, and of value to the special student who may want a popular summary of discoveries in all departments of science. We think that the present Record is more valuable than its predecessors, from the greater space (272 pages) devoted to the General Summary of Progress. Appended is a list of some of the more prominent scientific publications published during 1875. The full index gives evidence of careful editing. The present volume is a still more useful register of progress than the others of the series, and giving as it does a fair proportion of space to American discoveries, deserves the widest circulation.

RECENT MEMOIRS ON NORTH AMERICAN MAMMALS. — Dr. Gill's Synopsis of Insectivorous Mammals[3] is not by any means limited to the

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[1] *Annual Report of the United States Geological and Geographical Survey of the Territories, embracing Colorado, and parts of Adjacent Territories; being a Report of Progress of the Exploration for the Year* 1874. By F. V. HAYDEN. Washington. 1876. 8vo, pp. 515. With numerous illustrations.

[2] *Annual Record of Science and Industry for* 1875. Edited by S. F. BAIRD, with the assistance of eminent men of science. New York: Harper and Brothers. 1876. 12mo, pp. 656.

[3] *Synopsis of Insectivorous Mammals.* By THEODORE GILL. Bulletin of the United States Geological and Geographical Survey of the Territories. No. 2 (pp. 92–124). Second Series. Washington: Government Printing Office. May 14, 1875.